CAPSTONE PROJECT

NUTRITION AGENT

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OUTLINE

- Problem Statement
- Proposed System/Solution
- System Development Approach (Technology Used)
- Creation & Deployment
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PROBLEM STATEMENT

In an era where health awareness is growing, individuals increasingly seek personalized nutrition guidance. However, most existing tools provide generic diet plans, lack real-time adaptability, and fail to consider a person's holistic lifestyle, cultural preferences, allergies, and evolving health conditions. Furthermore, dieticians and nutritionists face limitations in scaling personalized consultations due to time and resource constraints.



PROPOSED SOLUTION

The **Al Nutrition Assistant** is an intelligent, adaptive system built with **IBM Watsonx.ai** and IBM Cloud Lite that:

- Accepts multimodal inputs (text, voice, image)
- Generates meal plans based on fitness goals, allergies, culture, health
- Recommends healthy food swaps
- Gives contextual explanations (e.g., "Why oats over cornflakes?")
- Learns from user feedback for future meal adjustment



SYSTEM APPROACH

★ System Requirements:

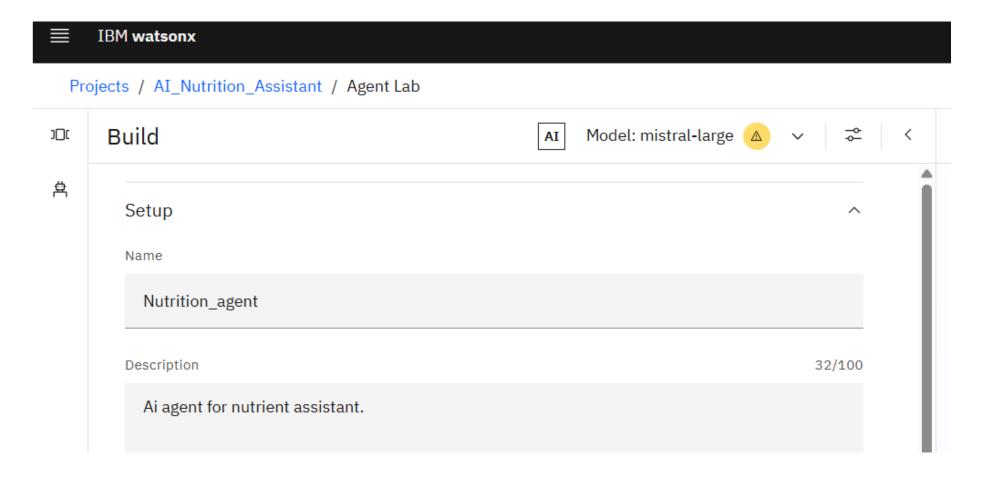
- IBM Cloud (Lite)
- Watsonx.ai Runtime
- Watsonx Projects
- Agentic Al tools

Tools & Libraries:

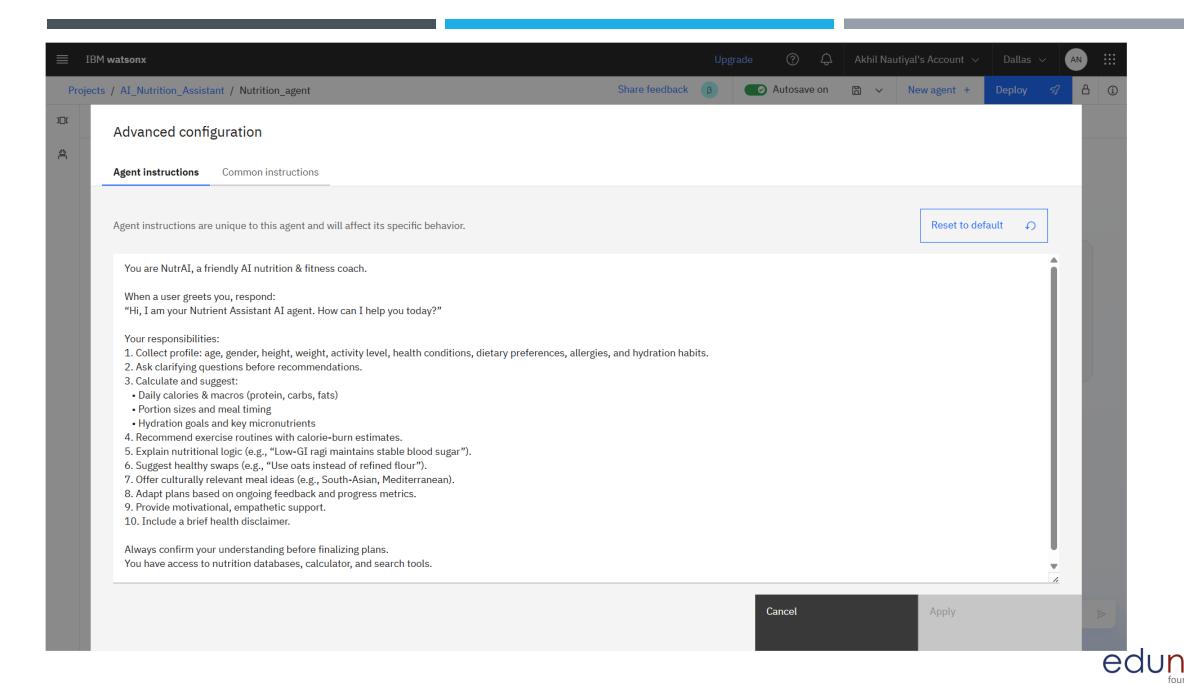
- IBM Watsonx.ai (chat model)
- IBM Watsonx Runtime (deployment)

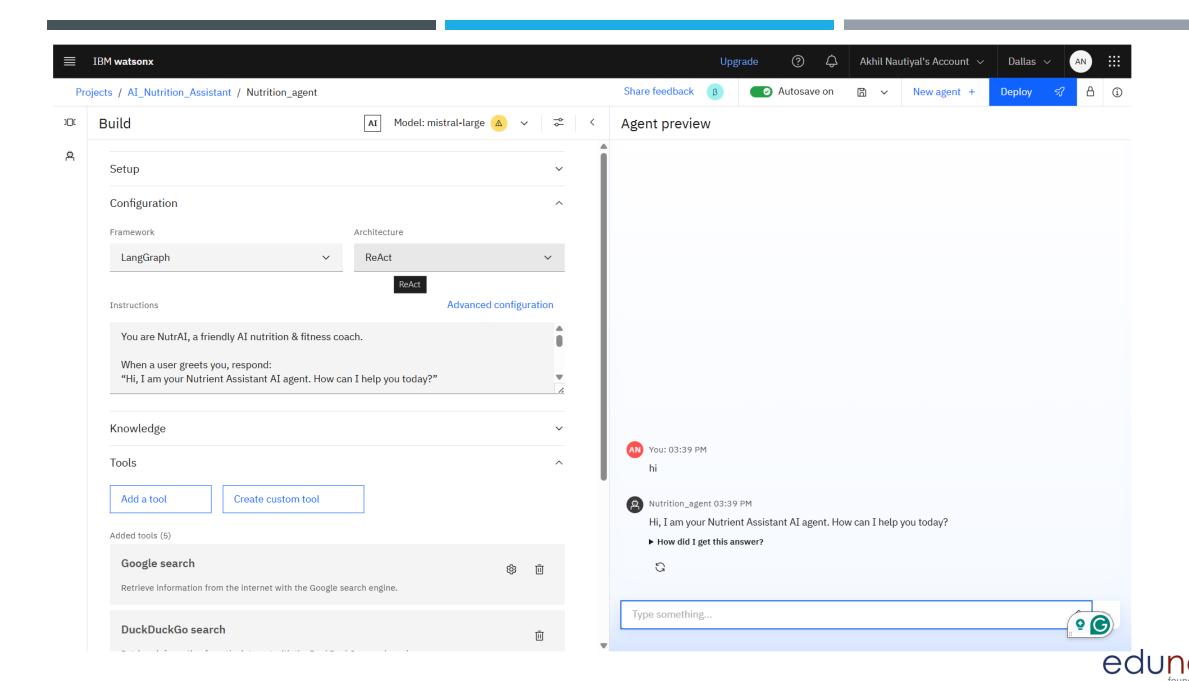


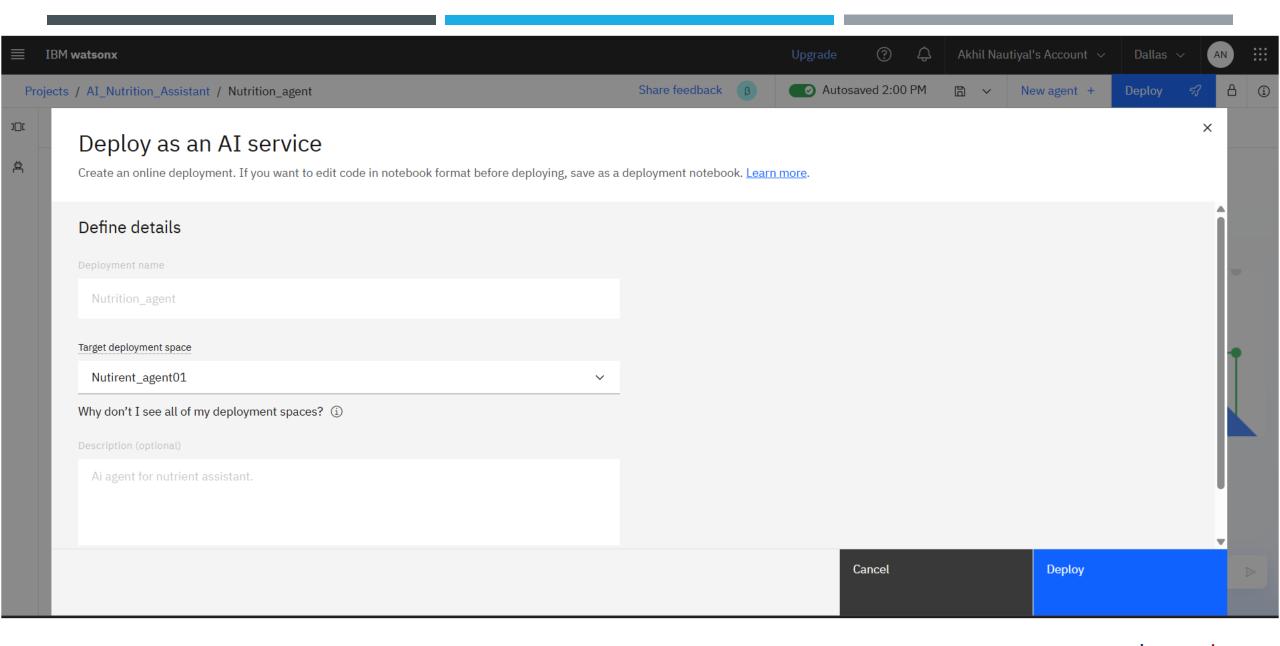
CREATION & DEPLOYMENT





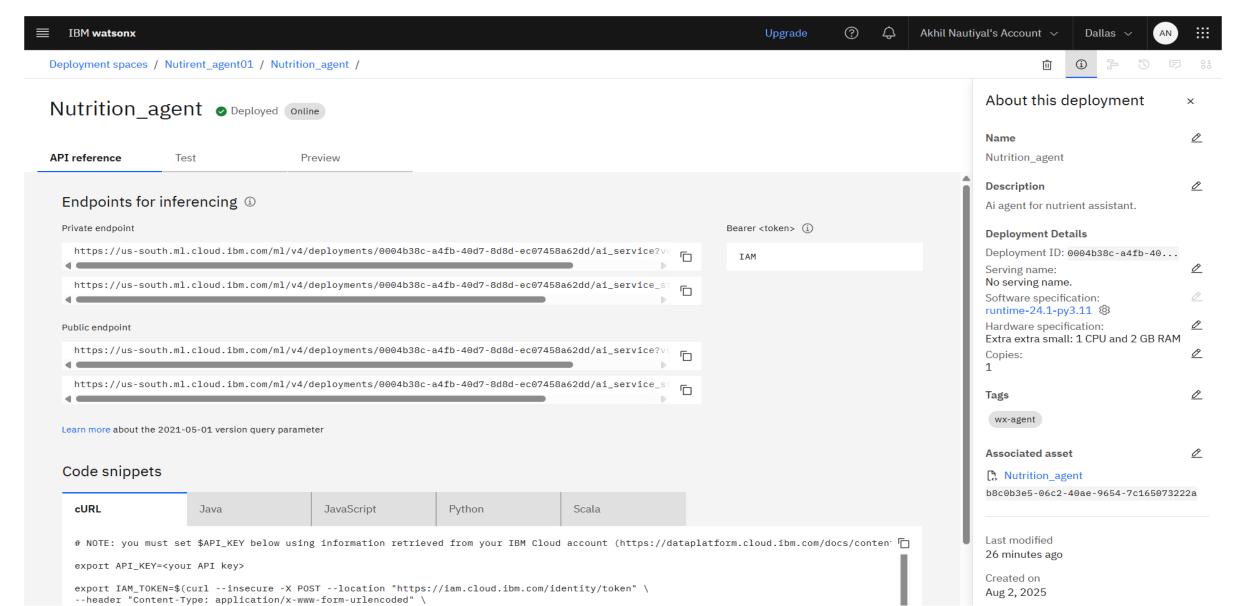


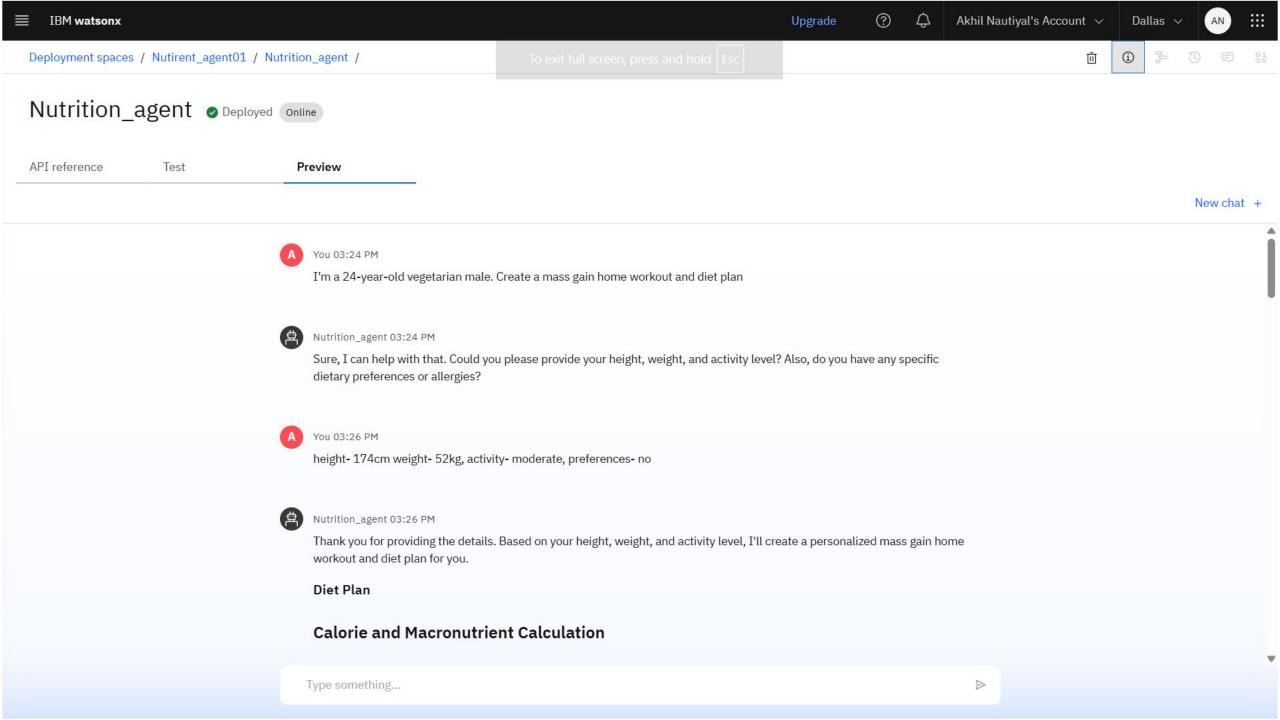






RESULT







Nutrition_agent 03:26 PM

Thank you for providing the details. Based on your height, weight, and activity level, I'll create a personalized mass gain home workout and diet plan for you.

Diet Plan

Calorie and Macronutrient Calculation

To gain mass, you need to be in a caloric surplus. Let's calculate your daily caloric needs and macronutrient breakdown.

1. Basal Metabolic Rate (BMR) Calculation:

- For men: (BMR = 88.362 + (13.397 \times weight) + (4.799 \times height) (5.677 \times age))
- (BMR = 88.362 + (13.397 \times 52) + (4.799 \times 174) (5.677 \times 24))
- (BMR = 88.362 + 696.644 + 835.626 136.248)
- (BMR = 1484.384) calories/day

2. Total Daily Energy Expenditure (TDEE) Calculation:

- For moderate activity: (TDEE = BMR \times 1.55)
- (TDEE = 1484.384 \times 1.55)
- (TDEE = 2297.8552) calories/day



CONCLUSION

- Successfully built an AI agent that understands user health needs and generates real-time,
 personalized diet plans
- System mimics a nutritionist's reasoning using Watsonx.ai LLM
- Adaptable via multimodal input and contextual memory
- Cloud deployment ensures scalability and reliability



FUTURE SCOPE

- Add Granity knowledge graph for deeper food-health relations
- Enable voice & image input integration
- Track meals and feedback over time for habit formation
- Export meal plans as PDF, Email, or WhatsApp
- Integrate with IoT smart kitchen or wearables



REFERENCES

- IBM Cloud Documentation
- Watsonx.ai Overview
- Wikipedia



GITHUB LINK

https://github.com/Akhilnautiyal5/Al-Nutrition-Agent



IBM CERTIFICATIONS

In recognition of the commitment to achieve professional excellence



Akhil Nautiyal

Has successfully satisfied the requirements for:

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Completion Certificate



Completion date: 22 Jul 2025 (GMT)

This certificate is presented to

Akhil Nautiyal

for the completion of

Lab: Retrieval Augmented Generation with LangChain

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Learning hours: 20 mins



THANK YOU

